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TWO TYPES OF HEADGEAR OF OLD TURKEY

The laborer on the right, resting his burden on the balustrade of the Galata Bridge, Constantinople, wears the old-time turban. On the left are two Turks in fezzes, one white and one red. Both fez and turban have been banished in Turkey now in favor of the derby and fedora of the Western World (see Bulletin No. 1).

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History By Hats in Turkey

HATS AND HISTORY are not coupled in most people's minds, but in Turkey radical changes in types of head coverings have marked important historical developments.

When the Ottoman Turks came down out of Central Asia as rough riding plainsmen they are believed to have worn the high, soft cap of astrakhan wool known as the kalpak—a sort of little brother to the drum-major's fuzzy, towering headpiece of to-day. The Turks have shown a tendency to take their reforms by sudden spurts, clinging to the latest change between times. Some years after their arrival in Southern Asia they went over bodily to the turban of that region, and this remained the characteristic Turkish headgear for many centuries.

The turban became the complex badge of rank and even profession in Turkey at the height of its power. From the snow-white turbans of the Moslem religious officials, and the huge piles with distinctive stripes and shapes of the grand vizier and lesser political lights, the head coverings ranged down to dirty cloths wound round the heads of the peasants. Every good Turk during this era had the profoundest contempt for things European and the hat was the badge of the infidel. One of the greatest insults that could be offered to a Turk who had shown too great friendliness toward "Franks" was to nail a hat to his door.

Brim Interfered With Prayer

The fez, which has been associated in the minds of the last few generations with all things Turkish, came as one of the sudden Turkish reforms relatively a short time ago. Sultan Mahmoud II, who ruled during the early years of the nineteenth century, wished, like Peter the Great of Russia, to modernize his people and turn their thoughts from Asia. He decreed that his people should abandon the turban and wear the fez, doubtless influenced by the fact that the latter is at once more modish and more convenient. He coupled the fez with the introduction of the frock coat for his courtiers and the well dressed young Turk in general, and for this he was denounced by most of his people as "the infidel sultan." The use of the fez continued, however, to such good advantage that within a generation or so it was looked upon by the outside world, and no doubt by most Turks, as the distinctive age-old Turkish head covering.

Why Mahmoud settled on the fez as the particular type of head covering to replace the turban is hard to understand. Most of his reforms looked toward Westernization. But something very like the fez was worn by the ancient Assyrians and Hittites, and it is supposed to have come down to modern times through the Byzantines and the Greeks. One thing in its favor was its lack of a brim. So long as the Turks were devout Moslems, practicing their prostrations at prayer time, brims were not permissible, since they interfered with the touching of the forehead to the ground.

After the World War, when a revolution became successful in Turkey, the leaders at first turned back to the ancient kalpak of the original Turks. This head covering became popular as signifying a return to the virtues of the old stock and was worn by all people of prominence in the new regime.

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COLOGNE FROM THE AIR

The famous cathedral overshadows this historic Rhine port, which was founded in 38 B. C. It is the center of the Rhenish trade and one of the most important commercial cities of Germany. To the left of the cathedral is the Central Railway Station, and in the distance is the Hohenzollern Bridge. Deutz lies on the opposite bank of the Rhine (see Bulletin No. 2).

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Cologne and Its Famous Cathedral

ARCHITECTS have issued a warning to Cologne that unless extensive repairs are made within a few years the dome of the cathedral will become a menace to safety.

Stone used in additions to the cathedral, which is third largest in the world, are not resisting the ravages of time and the enormous weight of the towers is causing the softer stones underneath to crumble.

In its stately Gothic cathedral, one of the largest in the world, Cologne has perhaps an even greater claim for world consideration than its age-long perfume supremacy. Begun in 1248, this magnificent edifice languished for six centuries and was not completed until 1863. For a long time Cologne was referred to jestingly as "the City of the Eternal Cathedral," just as Washington, D. C., was once dubbed "the City of Magnificent Distances." As in Washington's case, time has boomeranged the taunt. Those who have beheld the wealth of detail and the harmony of its proportions, despite its immensity, agree there is something memorable about Cologne's cathedral to-day that can be expressed in no better fashion than with the one-time jest.

"Fingers Pointing the City to Heaven"

Yet aged citizens interpret the edict of the architects to mean a long life for the city because of a superstition. There are some who believe the tradition handed down through centuries, that, "when the Cologne dome is finished the city will be destroyed."

Cologne's cathedral has often been compared with Milan's. Though the floor area is smaller than that of the Italian city's shrine, the German builders, more at home in the Gothic style, have achieved the Gothic upward sweep to perhaps its greatest perfection in Cologne. The twin spires, each nearly as tall as the Washington Monument, tower over the swift-flowing Rhine "like fingers pointing the city to Heaven." The whole enormous mass of grey-stone masonry is enlivened with a profusion of turrets, spires, flying buttresses, gargoyles, galleries, elaborately carved cornices and fluted columns.

Cologne, founded in 38 B. C., is one of the most ancient German cities. Rome made it the administrative seat of her holdings in South Germany, surrounding the city with formidable walls and adding the even more formidable name, Colonia Claudia Ara Agrippinensis. The wear and tear of the centuries, however, made short shrift of both wall and name. As the city expanded far beyond its walls, its name shrank in proportion until only "Colonia," meaning "colony," was left. Gallicized, this became "Cologne," which has also been adopted as the English form; Germanicized it was contracted to "Köln."

The St. Louis of Germany

Cologne is Germany's greatest river port and one of its major railroad centers. It is the St. Louis of Germany in this respect. In addition to being a port of registry for the Rhine-to-the-sea traffic, it has also profited through the development, in recent years, of direct lines of small cargo steamers to England, Scandinavia, and the Baltic. Under the graceful, arched iron bridge that connects Cologne with the east bank of the Rhine pass incredibly

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Fedora the Badge of a New Era

Like all the other changes in head coverings, the most recent move in favor of the straw, derby and fedora of western Europe has its significance. The Caliphate has been abolished, the Mohammedan religion has been removed from its place of power in the government, and there is no more reason why a Turk should not wear a brim if he chooses, than an Italian or an Englishman. And the movements that accompany this Europeanization of head coverings are significant. Polygamy has been abolished, women are encouraged to abandon the veil, marriages are to be civil only, and an entirely new code of laws, modeled largely after European systems, is being drafted.

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GANGPLANK OF THE SHENANDOAH, SHOWING THE DURALUMIN METAL FRAMEWORK

(See Bulletin No. 3)

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Aluminum: A Young Metal of Increasing Usefulness

A NEW competitor in the market of feather-weight metals is beryllium, which has been brought within reach of some industries, at least, by a new process which cuts its cost from $5,000 to $200 a pound, according to announcements.

Two other well-known "feather-weights" are duralumin and aluminum. Duralumin is an alloy of aluminum and is the metal used in the dirigible "Los Angeles" that is and the "Shenandoah" that was. The light metal most familiar to the average person is aluminum. Even aluminum is a "rookie" among metals.

Iron, copper, tin, zinc and lead did service to man earlier than the birth of Christ. Aluminum will be only 100 years old in 1927. Seventy years ago aluminum sold for $7 an ounce and was advertised as "silver from clay." The 7,300 tons produced in 1900 is multiplied twenty-five times. This "silver" of the sixties sells now for two cents an ounce.

Most Common of Metals

To play a joke on a jeweler ask him for "some nice stone in aluminum, about two or three carats." Probably he will look puzzled, but if he knows the chemistry of his trade he will lay before you gems fit for a king's crown. The ruby, sapphire, garnet and turquoise have a normal base of aluminum. Greater quantities of it are found than any other true metal; only half as much of its nearest rival, iron, occurs in igneous rocks, which include all rocks hardened from a melted state.

An element of such frequent occurrence is not confined to one country or continent. It is a partner in nearly all shales and clays, the latter a necessity of man from civilization's dawn. The evening potatoes which are boiled in an aluminum pan are placed before the family on china plates partly aluminum. Salts of aluminum play a part in the abrasive father uses to sharpen the carving knife, the dyes in his suit, the tanning of his shoes and his evening newspaper. Kaolin, the foundation of chinaware, has a wealthy content of aluminum and the man who develops a method of getting it out cheaper than pulling it away from the mineral now used, bauxite, will receive honors and riches.

Bauxite takes its name from the French hamlet Baux, ten miles east of Arles, on the lower Rhone. Best bauxite still comes from southern France, particularly from the hills back of the Riviera coast. But mineable quantities of bauxite, which is an earthy, soft, weathered mineral, are found in Antrim County, Ireland, in many parts of Germany, in British and French Guiana, and in India and Italy. More discoveries are being reported from time to time. In the United States important workings are near Little Rock, Arkansas. Steam shovels also scoop it up in northern Georgia and Alabama. American aluminum companies have bought control of large bauxite deposits in British and French Guiana.

Big Plant at Massena, N. Y.

To Charles M. Hall, whose rise to fame and fortune reads like an Alger romance, the housewife owes credit for her shining pots and pans. Hall, a Congregational minister's son, one day discovered an old chemistry textbook without cover or title page in his father's reading room; it decided his life's

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long strings of barges, lumber rafts, barge steamers, and black and white funneled passenger boats.

The toilet water, named for the French translation of Cologne's original Latin name, has become a synonym for scented liquids in both French and English. Although the Germans call their city Köln, and although they sometimes refer to its chief products as Kölnisches Wasser, they, too, have generally adopted the French "eau de cologne," as have also the English-speaking peoples.

As a manufacturing center Cologne, like Venice, has given its name to several articles of commerce. In addition to toilet water there is, for instance, Cologne brown, a brown coal, or lignite, used as a pigment in paints; Cologne ware, a plain, hard stoneware, mottled gray and brown, which is made into ornamental tankards and jugs; Cologne spirit, a rectified liquid containing 96 per cent alcohol; Cologne thread and Cologne blades.

Eau de Cologne Created by An Italian

The city reflects its commercial prosperity in numerous wide, tree-lined boulevards, fine shops and stores and imposing stone mansions. Most of the old, crooked, alleylike thoroughfares of fifty years ago have disappeared, although there are still a few picturesque sections, with ancient gabled house fronts and twisting, gas-lighted streets. Of the old city walls only the gate towers remain.

The toilet water, or eau de cologne, from which the city derives its international fame, is said to have been manufactured first in 1709, by an Italian, Johann Maria Farina. The industry grew slowly but steadily, and in 1819 there were sixty firms engaged in bottling this compound of alcohol and aromatic oils. It was the French, however, who commercialized the product, popularized the French translation of its name, and placed it on the market. Eau de cologne is now manufactured in many other parts of the world.

"Tommies" Taught Cologne English

Although the final evacuation of Cologne by the allied forces will doubtless bring about a restoration of its original Rhenish flavor, American and British visitors who have been long away from home will have at least one regret. For in Cologne, under British occupation, English was spoken and understood extensively. British "Tommies" patrolling the streets could direct the hungry Anglo-Saxon to a "Church of England Institute" where genuine ham and eggs, coffee (large cup) and bread (not rolls) could be had.

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Guatemala: Which Coffee Has Made Commercially Important

GUATEMALA will be the chief scene of operation for an expedition setting out to study tropical timber resources.

The investigations will take in two of the principal forestry products of Guatemala at the present time, mahogany and chicle, as well as a survey of other woods. Mahogany trees and the trees from which chicle gum is obtained are found in the Peten region of eastern Guatemala. In a recent year this Central American republic sent 741,000 pounds of chicle to United States to be made into chewing gum.

Mahogany and chicle, however, are overshadowed commercially, as are all other products in Guatemala, by coffee. While United States receives the bulk of its coffee supplies from Brazil, the imports from Guatemala are important. In a recent year Guatemala produced 93,918,000 pounds of coffee, valued at ten million dollars.

Coffee a Blessing and a Curse

Guatemala, which has been economically and in a military sense one of the most powerful of the five Central American states ever since it was the seat of the old Spanish viceroyal government for the entire region, is a country both blessed and cursed by coffee. Coffee is a blessing to Guatemala in that it has brought much money into the country and has made the plantation-owning class exceedingly prosperous.

Coffee may be considered in a sense a curse to Guatemala because its production dominates every other activity in the republic, and is the indirect reason therefore for failure to develop most of the country's other resources. Though the plateau country of the southwest apparently could be made to produce wheat, flour is imported. A number of other food products that could be produced are also brought in from outside. Cotton could be grown on large areas but only a comparatively small amount is produced. The greater part of the cotton cloth and yarn needed is imported. The raising of cattle and sheep, the growing of almost all tropical, semi-tropical, and temperate zone fruits, and mining are all industries that could be developed most profitably.

North American enterprise has in recent years built up a heavy production of bananas in the hot plains along the Atlantic coast, in a region formerly covered with jungle and considered practically worthless. The value of bananas exported now is second only to that of coffee. In connection with the development of the banana country, Guatemala has obtained an ocean to ocean railroad, one of the two transisthmian railways in Central America.

The dominance of the coffee-growing industry, and the fact that the Indian population of Guatemala was much greater than that of the territory of the other four Central American states when the Spaniards came have had a noticeable effect on the country's institutions. Peonage has been common.

Two-fifths of the People in Central America

Many of the Indian agricultural laborers, though legally entirely free, are habitually in debt to the owners of the great coffee plantations, and are brought back by the military and police if they escape, the cost of their apprehension being

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ambition. At the age of 22, while attending Oberlin College in Ohio, he invented the electrolysis process by which practically all aluminum is made to-day. Electrolysis is called "electric loosening." Aluminum is in combination with oxygen, to which it is attracted like steel to a magnet. Hall subjected it, under certain conditions, to a powerful electric current and split the particles to form pure aluminum.

Massena, in northernmost New York, is the present source of much aluminum entering the American market, although other plants located near great water power are found at Maryville, Tennessee; Badin, North Carolina, and Great Falls, Montana. At Massena the St. Lawrence River is borrowed, put to work and turned back to help float ocean liners at Montreal. Before man took a hand the Grass River, little more than a creek, flowed through a farming country to join the St. Lawrence about where the American border line leaves the river. Now part of the St. Lawrence flow is diverted to couple forces with the Grass to give electric power for the aluminum plant which looms against the sunset like Gary's hugest blast furnaces.

Duralumin's production is a trade secret. Aluminum is its chief content and there is also copper. It is so light that a girder 16 feet long can be balanced on one's little finger, but so strong that if its ends are placed on blocks it will support eight men.

Why Metal Wins Friends

The qualities of aluminum win it more friends constantly. Weight for weight it offers twice as smooth a road for transporting electricity as copper. For its virtue of radiating heat more rapidly than iron or most other metals, and for its lightness, automobile makers welcome it. Because it absorbs heat quickly, is light and does not rust, it is used for utensils. On western alkali plains, however, it turns black and comes off in flakes.

Under certain circumstances aluminum has a violent affection for oxygen. This quality workmen employ in making molten metal on the spot. When you see a hooded man working in a brilliant light on the street-car track he is employing the thermite process. A mixture of aluminum powder and iron oxide (rust) is ignited with magnesium. In a violent effort the aluminum robs the iron of oxide; the iron liquifies in the terrific temperature attained, 6,000 degrees Fahrenheit, within 30 seconds, and welds the rails. This temperature approaches the heat of the steel-carving oxy-acetylene blowtorch, the highest temperature common to industry.

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Nayarit: A Mexican State of Rich Resources

HEAVY floods have hit the State of Nayarit on the west coast of Mexico. Reports estimating that as many as 2,000 people were drowned in the swollen torrents have filtered into the United States. Nayarit, a region little known by Americans, is described in a communication to the National Geographic Society by Herbert Corey in which he tells of an equally serious blight visited on the state by revolution.

SENOR ZOPILOTE IN A MOMENT OF RELAXATION

Modern physicians do not agree with the Mexican belief that the buzzard is a safe and efficient scavenger. Instead, it is maintained that he is a dangerous carrier of disease. In Mexico, however, sanitation is entrusted in the smaller towns to the joint efforts of the buzzards, the pigs, and the dogs.

"The twentieth century has been a bit late in reaching this State of Nayarit, of which Tepic is the capital; but it seems convincingly there at last. The railroad has come, so that one may ride in Pullman cars direct from the northern border, if one prefers the rails to the Old Spanish Road.

"There is no richer state in raw materials in the world, perhaps, than Nayarit. No one knows how rich it is. In its 10,000 square miles the 170,000 inhabitants can raise any crop desired.

"The farmer has but to vary the elevation to find the proper climate. There are limes, lemons, oranges, wheat, corn, beans, bananas, palms, coconuts, cotton, tobacco—the list is endless. There are even two grapevines and one apple tree in Nayarit, which are remarkably fruitful. Nn one seems to know why it has never occurred to anyone to plant others.

In the Grip of Great Landowners

"Nor is irrigation needed, so well balanced is the rainy season in normal years over the greater part of the state. In the mountains there are proved mines by the score. One hears of little workings here and there where two or three men are chipping away at a small vein and pulverizing the ore in an old-fashioned *arrastra*, in which mules drag heavy weights over a stone floor. Now and then the men come into town with a sack full of gold bars.

"The trouble in Nayarit for years was that the state was in the grip of the great landed interests. There are almost no small land holdings and few of the larger ranches were properly worked.

"One great Spanish House and one great German House—the word house

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added to their debts. The only alternatives for the more ignorant of the Indians are to work under similar conditions for another proprietor or to be impressed into the army. The wages received by the agricultural laborers are the equivalent of only a few cents a day in the money of the United States.

Comparative immunity from civil war up to 1920 has been ascribed in large part to the relatively large standing army of the country. The percentage of illiteracy in Guatemala is high. Elections are held, but the party in power—and usually as long as he desires, the president in power—has seldom had any effective opposition.

Guatemala has an area of 48,290 square miles, slightly larger than that of the State of New York. It has a population of about 2,000,000, which is approximately 40 per cent of the entire population of Central America. A large part of the population of Guatemala is of Indian blood unmixed with the blood of Europeans. In this respect Guatemala differs from its neighboring republics, in three of which the majority of the populace is of mixed blood, and in one of which the Indians were exterminated.

Guatemala Looks to the Pacific

On the west and north Guatemala is in contact with Mexico. It has both an Atlantic and Pacific coast line, the latter the more extensive. The bulk of the population, as in the other Central American states, lives close to the Pacific coast on the slopes of exceedingly fertile volcanic mountains, on the neighboring plateaus, and in the valleys. The people of this populous region have frequently suffered from disastrous volcanic eruptions and earthquakes.

TYPE OF GUATEMALA FOREST

The main forested sections of Guatemala lie in the broad level region of the eastern coast. The first colonies in this country were established for the purpose of getting out mahogany trees. Mahogany is still an important export. Chicle also comes from this Peten District.

is used as more truly descriptive of these organizations than the modern terms of company or firm—dominated the situation. They had the only money to lend in Nayarit.

"They controlled the market. They ruled the state as a feudal principality. When the Southern Pacific built its lines into Tepic, in 1922, its labor camps were searched twice a week by the majordomos of the great houses.

Railroad Builders Have Hard Time

"'This man is ours,' the majordomos said. 'And this man, and that. What can this man do? He is a carpenter? Very well; we will take him, too.'

"The railroad could not fight back. Its best men were sometimes taken in spite of every effort to protect them. Men to whom the road was glad to pay three pesos a day were returned to the houses for a wage of less than a peso. The men dared not resist. The whip had been used not so long ago on peons in Nayarit. The houses had their own way of bringing pressure on the courts.

AN INDIAN GIRL WITH A BROOM

The Mexican Indians are always poor, often half starved, always more or less oppressed by the upper classes, and yet they always seem to be happy.

"One understands that a ground fertile for the growth of any healthy *ism* had been prepared. Even after the revolution came and peons were presumably free, they were held in bondage. They were compelled to pay a tribute to the houses—in eggs, or chickens, or work.

Precious Ornament for a Song

"It is true—one does not hear this from the peon—that they were always fed, even when free men went hungry, and that there were always roofs over their heads, and far better roofs than their free friends owned. But they turned rebel against their masters when they had the chance.

"Some of the land was distributed among the peons and many songs of liberty were sung. With the combined work of the *revolutionistas* and the *bandidos* and a few neighbors, almost all the livestock in the state was killed or stolen.

"For months Tepic and Nayarit lived by a system of barter. Property values went down almost to nothing. The taxes were due and payable just as if the owners had been prosperous.

"When the owners could not pay, the state offered the properties for sale—for cash. There being almost no cash in the country, the properties did not sell. Then they were offered at successive reductions, until the prices became absurd. These set the values for all the rest."